

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-16. (Canceled)

17. **(Currently Amended)** An onboard terrain anticollision device for an aircraft, comprising:

a memory including topographic data of the terrain and/or of the obstacles overflown; and

an information processing apparatus comprising:

an input configured to receive flight parameters;

a first trajectory prediction unit configured to establish₁ on the basis of said flight parameters₁ at least a first safety surface ~~or profile~~ corresponding to a first predicted trajectory, the first safety surface ~~or profile~~ having a first flight duration and being bounded laterally by a first left limit and a first right limit, said first right and left limits being defined essentially by a first lateral margin and at least a first angle of left lateral aperture and at least a first angle of right lateral aperture;

a first topographic calculation unit configured to establish₁ on the basis of said flight parameters₁ at least ~~one first profile or~~ a first topographic surface constituted on the basis of the topographic data of the terrain and/or of the

obstacles overflown;

a first comparison unit configured to compare ~~establish at least one first comparison between~~ said first safety surface ~~or profile~~ and a first profile ~~or a the~~ first topographic surface for determining at least one first risk of collision of the aircraft with the ground corresponding to the first flight duration;

a second trajectory prediction unit configured to establish₁ on the basis of the flight parameters₁ a second safety surface ~~or profile~~ corresponding to a second predicted trajectory, the second safety surface ~~or profile~~ having a second flight duration lesser than the first flight duration and being bounded laterally by a second left limit and a second right limit, said second right and left limits being defined essentially by a second lateral margin and at least a second angle of left lateral aperture and at least a second angle of right lateral aperture;

a second calculation unit configured to establish₁ on the basis of the flight parameters₁ ~~a second profile or~~ a second topographic surface constituted on the basis of the topographic data of the terrain and/or of the obstacles overflown;

a second comparison unit configured to compare ~~establish a second comparison between~~ said second safety surface ~~or profile~~ and the second profile ~~or the second topographic surface~~ for determining a second risk of collision of the aircraft with the ground corresponding to the second flight duration; and

an alarm unit linked to said information processing apparatus and configured to ~~establish at least~~ generate:

a first alarm ~~as a function of the results of the first comparison~~ being a

vertical avoidance alarm when the first risk of collision is avoidable by a simple vertical avoidance maneuver; and

~~a second alarm as a function of the results of the second comparison, the second alarm being generated~~ being a traverse avoidance alarm when the second risk of collision is not avoidable ~~cannot be avoided~~ by a simple vertical avoidance maneuver.

18. **(Currently Amended)** The onboard terrain anticollision device as claimed in claim 17 wherein said information processing apparatus further comprises:

a third trajectory prediction unit configured to establish₁ at least on the basis of the flight parameters₁ a third safety surface ~~or profile~~ corresponding to a third predicted trajectory, the third safety surface ~~or profile~~ having a third flight duration greater than the first flight duration and being bounded laterally by a third left limit and a third right limit, said third right and left limits being defined essentially by a third lateral margin and at least a third angle of left lateral aperture and at least a third angle of right lateral aperture;

a third topographic calculation unit configured to establish₁ at least on the basis of said flight parameters₁ ~~a third profile or~~ a third topographic surface constituted on the basis of the topographic data of the terrain and/or of the obstacles overflown; and

a third comparison unit configured to ~~at least one third comparison between~~ compare said third safety surface ~~or profile~~ and ~~a third profile or a~~ the third topographic surface for determining at least one third risk of collision of the aircraft with the ground

corresponding to the third flight duration;

wherein the alarm unit linked to said processing apparatus is further configured to establish at least a prealarm for indicating a potential collision according to the determined third risk of collision~~as a function of the results of the third comparison.~~

19. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the second flight duration has a duration of less than 3 seconds.

20. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the first alarm is of the vertical avoidance alarm type and the second alarm is of the transverse avoidance alarm type, the vertical avoidance alarm corresponding for the pilot to a vertical avoidance maneuver and the transverse avoidance alarm corresponding for the pilot to a transverse avoidance maneuver.

21. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 17, wherein the first or the second safety surface ~~or profile~~ comprises two parts:

a first part corresponding to a first flight time (T_1), dependent on a prediction of the trajectory in progress calculated on the basis of an origin (O) taken under the aircraft; and

a second part corresponding to a second flight time (T_2) following the first flight time, dependent on a prediction of a vertical avoidance trajectory.

22. (Previously Presented) The onboard terrain anticollision device as claimed in claim 21, wherein the parameters defining the first part or the second part of the second safety surface can be substantially different from the parameters defining those of the first safety surface.

23. (Canceled)

24. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the first lateral margins or the first angles of right and left lateral aperture are substantially different from the second lateral margins or from the second angles of right and left lateral aperture of the limits.

25. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein at least one of the first comparison unit or second comparison unit comprise a criticality indicator of the risk of collision with the terrain.

26. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 25, wherein the criticality indicator depends on the first or the second topographic surface ~~or the terrain profile~~ situated above the first or the second safety surface ~~or profile~~.

27. (**Currently Amended**) The onboard terrain anticollision device as claimed in claim 25, wherein the criticality indicator depends on the first or the second topographic surface or the terrain profile and ~~[[the]]~~a terrain height situated above the first or the second safety surface ~~or profile~~.

28. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the alarms are of audible or visual type.

29. (Previously Presented) The onboard terrain anticollision device as claimed in claim 17, wherein the information processing apparatus further comprise an alarm management unit configured as a function of the evolution of the risks of collision with the terrain.

30. (Previously Presented) The onboard terrain anticollision device as claimed in claim 29, wherein the alarm management unit comprises a device configured to switch the first and the second alarms.

31. (Previously Presented) The onboard terrain anticollision device as claimed in claim 30, wherein the switching is performed when the trajectory of the aircraft has evolved noticeably.

32. (Previously Presented) The onboard terrain anticollision device as claimed in claim 30, wherein the evolution of the trajectory of the aircraft is a change of the slope or of the roll or of the heading of more than a few degrees.

33. (Previously Presented) The onboard terrain anticollision device as claimed in claim 18, wherein the first flight duration is no greater than 8 seconds, the second flight duration is no greater than 3 seconds, and the third flight duration is no greater than 20 seconds.

34. (Previously Presented) The onboard terrain anticollision device as claimed in claim 19, wherein the first flight duration is no greater than 8 seconds.

35. **(Currently Amended)** A method of operating an onboard terrain anticollision device for an aircraft, comprising:

receiving flight parameters;

establishing, on the basis of said flight parameters, a first safety surface corresponding to a first predicted trajectory, the first safety surface having a first flight duration;

establishing a first topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

~~comparing establishing a first comparison between~~ the first safety surface and the first topographic surface for determining a first risk of collision;

establishing, on the basis of the flight parameters, a second safety surface corresponding to a second predicted trajectory, the second safety surface having a second flight duration lesser than the first flight duration;

establishing a second topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

~~comparing establishing a second comparison between~~ said second safety surface and the second topographic surface for determining a second risk of collision;

generating a first alarm being a vertical avoidance alarm when the first risk of collision is avoidable by a simple vertical avoidance maneuver~~as a function of the results of the first comparison~~; and

generating a second alarm being a traverse avoidance alarm as a function of the results of the second comparison and when the second risk of collision is not avoidable~~cannot be avoided by a simple vertical avoidance maneuver~~.

36. **(Currently Amended)** The method of claim 35, further comprising:

establishing, on the basis of said flight parameters, a third safety surface corresponding to a third predicted trajectory, the third safety surface having a third flight duration greater than the first flight duration;

establishing a third topographic surface according to the flight parameters and the topographic data of terrain or obstacles;

~~comparing establishing a third comparison between~~ the third safety surface and the third topographic surface for determining a third risk of collision; and

~~generating establishing at least a third alarm for indicating a potential collision according to the determined third risk of collision as a function of the results of the third comparison.~~

37. (Previously Presented) The method of claim 36, wherein the first flight duration is no greater than 8 seconds, the second flight duration is no greater than 3 seconds, and the third flight duration is no greater than 20 seconds .